

THE STATUS OF FOUR-HORNED ANTELOPE *TETRACERUS QUADRICORNIS*¹

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INTRODUCTION

The four-horned antelope (FHA) *Tetracerus quadricornis* is a diminutive antelope, standing 65 cm at the shoulder (Prater 1980). Despite the unusual trait of having two pairs of horns, it has attracted little scientific attention. There have been no investigations focusing specifically on this species, and it is generally given only brief treatment in accounts of multi-species studies (Schaller 1967, Krishnan 1975, Sharatchandra and Gadgil 1975). Berwick's (1974) study in the Gir Forest is a notable exception. He provides information on FHA densities, group size and composition, reproduction, habitat preference, and food habits. In order to assess the current status of this unique Indian antelope, a mail survey was carried out in 1986-87 with the following results.

METHODS

Questionnaires on the status of four-horned antelope were sent to 106 wildlife administrators and 33 non-governmental organizations or private individuals in 10 states (Andhra Pradesh, Bihar, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh). The questionnaire requested the following information:

1. Name and location of site.
2. Area of site in sq. km.
3. Major habitat or forest types of the site.
4. Presence of FHA (yes or no).
5. Estimate of abundance of FHA based on the following definitions: **Abundant:** there are frequent sightings of FHA during an average day in the site. **Common:** 1 or 2 FHA seen during an average day in the site. **Rare:** FHA seen infrequently in the site. **Possible:** FHA have been reported in the site, but presence not yet confirmed by reliable sources. **Extinct:** reliable reports of FHA in the site in the past, but no recent evidence has been found (locally extinct).

6. Local population trend (increasing, stable, or decreasing).

7. Total population size.

8. Method by which the population size was estimated.

Information from questionnaire responses was supplemented with material from published sources (Krishnan 1975, Maheshwari 1972, Rashid 1982, Saharia 1982, Schaller 1967, Sharatchandra and Gadgil 1975, Spillett 1968a, b, c, Variava and Singh 1985) and the protected areas database of the Indian Institute of Public Administration (Kothari pers. comm.)

RESULTS

A total of 83 sites with FHA were recorded (Appendix 1). It is likely that FHA occur in other locations, particularly on forested lands outside National Parks and Sanctuaries. However, it is likely that the geographic and ecological distributions of FHA are reasonably represented by the material obtained.

FHA populations were reported from sites in all 10 states: Andhra Pradesh-13 sites, Bihar-3, Gujarat-3, Karnataka-7, Madhya Pradesh-24, Maharashtra-13, Orissa-6, Rajasthan-5, Tamil Nadu-6, and Uttar Pradesh-4. Only two sites reported that FHA were locally extinct (the proposed Karlapat Sanctuary, Orissa and Keoladeo National Park, Rajasthan). So despite the potential for local population reductions, the overall geographic range of the FHA has apparently not been significantly reduced in the recent past.

Of the 30 sites for which habitat type information was available, 26 (87%) contained southern tropical dry deciduous (teak, *Tectona grandis*) forest (type 5A, Champion 1936), 14 (47%) contained northern tropical dry deciduous (sal, *Shorea robusta*) forest (type 5B), 14 (47%) contained south Indian moist deciduous (teak) forest (type 3B), 7 (23%) contained edaphic types of dry deciduous forests (type 5/E1, 2, 6, 9), 7 (23%) contained tropical scrub thorn forests (types 5/DS and 6), and 5 (17%) contained north Indian moist deciduous (sal)

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TABLE 1
POPULATIONS OF FOUR-HORNED ANTELOPE REPORTED
TO BE DECLINING

Site	State	Area (km ²)	Population Size
Hazaribagh Sanctuary	Bihar	183	10
Kheoni Sanctuary	M. P.	123	—
Talamalai Reserve Forest	Tamil Nadu	250	—
Mudumalai Sanctuary	Tamil Nadu	250	50
Renukoot Forest Division	U.P.	—	—
Gona Reserve Forest	U.P.	147	—
Madaura Reserve Forest	U.P.	200	—
Lalitpur Reserve Forest	U.P.	143	—

M.P. = Madhya Pradesh, U.P. = Uttar Pradesh

TABLE 2.
POPULATION OF FOUR-HORNED ANTELOPE AT
OPTIMUM SITES

Site	State	Area (km ²)	Population Size	Density (km ²)
Gir National Park & Sanctuary	Gujarat	1,412	1,063	0.75
Pench Sanctuary	M.P.	118	94	0.80
Panna National Park	M.P.	543	478	0.88
Dhankolkaz Sanctuary	Maharashtra	382	488	1.28

Sites with reported densities greater than 0.70/ sq. km have been considered as optimum sites.

forest (type 3C). The G test (Sokal and Rohlf 1969) for interaction between habitat and reported abundance showed no significant effect ($G=32.8$, d.f. = 24).

Subjective assessments of FHA abundance based on the criteria provided were available for 21 sites: abundant-2 (10%), common-10 (48%), uncommon-6 (29%), rare- 2 (10%), and locally extinct-2 (10%). FHA were thought to be increasing in 6 sites (32%), stable in 5 (26%), and decreasing in 8 (42%, $N=19$). Reasons for an increasing population are of interest, but particular attention should be paid to the factors responsible for population declines, something not addressed in the survey. Sites reporting declining population are listed in Table 1. It is perhaps significant that most of these sites are on the periphery of the FHA's range and are not in areas specifically dedicated to wildlife preservation.

The Gir Forest is the only site for which there have counts of FHA over a span of several years.

Berwick (1974) calculated a FHA population of 256 for 1970, but thought the actual population might be as high as 800. Since then water hole counts have produced the following population estimates for Gir: 1974-977, 1977-1,042; 1985-1,063 (Rashid 1982, Gujarat Wildlife Division undated).

The 4 sites with densities greater than 0.7/ sq km which may be considered optimum sites for FHA are listed in Table 2.

DISCUSSION

Despite the difficulties inherent in summarizing second-hand accounts, several conclusions may be drawn concerning the status of FHA. For most populations, little information was available beyond the presence or absence of FHA. Solid figures are needed on population sizes and trends. In addition, many aspects of the biology of this species remain unclear. Informed management of existing populations cannot proceed without further information.

With numerous widely-spread populations, there is little need for concern for the immediate survival of this species. However, many of the populations are small, the majority for which we have information being under the recommended minimum of 500 for sustaining genetic variability (Frankel and Soule 1981). However, it is not known at present how insular these populations are — that is to say how large actual interbreeding populations are. Nevertheless, it is likely that FHA populations are becoming increasingly isolated as human impacts intensify and spread. Given the low densities and small population sizes that are common for FHA, there is every bit as much justification for concern over the genetic management of these populations as there is for the populations of more spectacular species such as tigers. The FHA would, in fact, be an excellent candidate for trial efforts for techniques in genetic monitoring and conservation management.

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APPENDIX 1

LOCATIONS OF REPORTED FOUR-HORNED ANTELOPE POPULATIONS IN INDIA.

Site	District (s)	State
Gona Reserve Forest	Lalitpur	Uttar Pradesh
Lalitpur Reserve Forest	Lalitpur	Uttar Pradesh
Madaura Reserve Forest	Lalitpur	Uttar Pradesh
Renukoot Forest Division	Mirzapur	Uttar Pradesh
Hazaribagh Sanctuary	Hazaribagh	Bihar
Kodarma Sanctuary	-	Bihar
Palamau Tiger Reserve	-	Bihar
Kumbhalgarh Sanctuary	Udaipur	Rajasthan
Phulwari Sanctuary	-	Rajasthan
Sariska National Park & Sanctuary	Alwar	Rajasthan
Sitamata Sanctuary	Chittorhgarh & Udaipur	Rajasthan
Todgarh Raoli Sanctuary	Ajmer & Udaipur	Rajasthan
Gir National Park & Sanctuary	Junagadh	Gujarat
Puma Sanctuary	-	Gujarat
Vansda Reserve Forest	Dang	Gujarat
Bandhavgarh National Park	Shahdol & Jabalpur	Madhya Pradesh
Barnawapara Sanctuary	Raipur	Madhya Pradesh
Bori Sanctuary	Hoshangabad	Madhya Pradesh
Indravati National Park	Bastar	Madhya Pradesh
Kanger Ghati National Park	Bastar	Madhya Pradesh
Kanha National Park	Mandla & Balaghat	Madhya Pradesh
Kheoni Sanctuary	Dewas	Madhya Pradesh
Kutree Sanctuary	-	Madhya Pradesh
Madhav National Park	Shivpur	Madhya Pradesh
Mandasur Forest Division	-	Madhya Pradesh
Nauradehi Sanctuary	Damoh, Sagar & Narasinghpur	Madhya Pradesh
Pachmarhi Sanctuary	Hoshangabad	Madhya Pradesh
Palpur Kund Sanctuary	Morena	Madhya Pradesh
Panna National Park	Panna	Madhya Pradesh
Panpatha Sanctuary	Shahdol	Madhya Pradesh
Pench National Park	Seoni & Chhindwara	Madhya Pradesh
Pench Sanctuary	Seoni	Madhya Pradesh

APPENDIX I (Contd.)

Site	District (s)	State
Ratadani Sanctuary	Raisen	Madhya Pradesh
Sanjay Sanctuary	Sidhi	Madhya Pradesh
Satpura National Park	Hoshangabad	Madhya Pradesh
Seoni Forest Division	Seoni	Madhya Pradesh
Shivpuri National Park	—	Madhya Pradesh
Singhori Sanctuary	Raisen	Madhya Pradesh
Tadoba National Park	—	Madhya Pradesh
Udanti Sanctuary	Raipur	Madhya Pradesh
Bamragarh Forest Division	—	Maharashtra
Dhankolkaz Sanctuary	Amravati	Maharashtra
Kamala Sanctuary	Raigad	Maharashtra
Melghat Sanctuary	Amravati	Maharashtra
Nagzira Sanctuary	Bhandara	Maharashtra
Nawegaon National Park	Bhandara	Maharashtra
Osmanabad Forest Division	—	Maharashtra
Pench National Park	Nagpur	Maharashtra
Sanjay Gandhi National Park	Thane & Bombay	Maharashtra
South Chanda Forest Division	—	Maharashtra
Tansa Sanctuary	Thane	Maharashtra
West Nasik Forest Division	—	Maharashtra
Badrama Sanctuary	—	Orissa
Chandaka Dampada Sanctuary	Puri & Cuttack	Orissa
Kotagarh Sanctuary	—	Orissa
Satkosia Sanctuary	Dhenkanal & Cuttack	Orissa
Simlipal National Park & Sanctuary	Mayurbhanj	Orissa
Eturnagaram Sanctuary	—	Andhra Pradesh
Giddalur Forest Division	—	Andhra Pradesh
Gudem Sanctuary (proposed)	—	Andhra Pradesh
Karimnagar Reserve Forest	—	Andhra Pradesh
Kawal Sanctuary	Adilabad	Andhra Pradesh
Kinnersani Sanctuary	Khamman	Andhra Pradesh
Lankamallai Sanctuary	—	Andhra Pradesh
Nagarjunsagar-Srisailam Sanctuary	Mahboobnagar	Andhra Pradesh
Pakhal Sanctuary	Narangal	Andhra Pradesh
Papikonda Sanctuary	E. & W. Godavari	Andhra Pradesh
Pranhita Sanctuary	Adilabad	Andhra Pradesh
Siwaram Sanctuary	Adilabad & Karimnagar	Andhra Pradesh
Venkateshwara Sanctuary	—	Andhra Pradesh
Bandipur National Park	Mysore	Karnataka
Dandeli Sanctuary	—	Karnataka
Mookambika Sanctuary	Dakshina Kannada	Karnataka
Nagarhole National Park	Mysore & Coorg	Karnataka
Sharavathi Sanctuary	Shimoga	Karnataka
Shettihalli Sanctuary	—	Karnataka
Tungabhadra Sanctuary	Bellary	Karnataka
Mudumalai Sanctuary	Nilgiris & Mudumalai	Tamil Nadu
Sigur Range	Nilgiris	Tamil Nadu
Talamalai Reserve Forest	Periyar	Tamil Nadu